

MEDICAL PROGRESS:

Recent Advances in Neurology

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SINCE presidential addresses before two national neurological societies in 1946 were concerned with it, we may note at the outset that neurology is not psychiatry, though there are medical forces which would encourage this confusion. While a neurologist may know something about behavior, normal or abnormal, it is quite safe to say that it is not because of his knowledge of the structure and function of the nerves, spinal cord, and brain. What information we have about the physical universe and particularly of the intricate structure, function, and disease of the brain tells us little or nothing of human behavior; it throws no light on why one person is quietly and meekly passive and another boisterously aggressive, nor why either of them may or may not achieve, and what motivates the criminal and the saint, nor will it do so for centuries to come. In 1870 Doctor Oliver Wendell Holmes¹⁴ said on this subject, "We do not find Hamlet and Faust, right and wrong, the valor of men and the purity of women by . . . examining fibres in microscopes." A neurologist is not necessarily the sort of expert in human affairs that many expect him to be and it is well to have done with this notion, particularly before a discussion concerning progress in neurology is attempted. The neurologist's information other than intuitive about mental functioning, as one should expect, is directly related to his training therein, in other words to his study of psychiatry.

A neurologist is one who is familiar with the function and malfunction of nerves, spinal cord, and brain, which to be sure, like malfunction of the heart, lungs, or liver may result in mental symptoms. Besides, neurology has come to include certain disorders of the muscles and endocrine glands. Within the last 50 years the neurologist has been joined by his colleague, the surgeon, who is technically expert in manipulating these tissues. They alleviate certain diseases between them, for example, infections and growths within the skull or spinal canal; the neurologist, however, takes precedence in his interest in certain other disorders of the nervous system. As an example, we may cite epilepsy and cerebral hemorrhage.

EPILEPSY

The meetings of the Association for Research in Nervous and Mental Disease on December 13 and 14, 1946, in New York City were concerned with the topic of epilepsy. For anyone interested in the latest knowledge of this subject the proceedings[‡] of this meeting are a requisite, since epilepsy was

considered exhaustively in all of its phases. Parenthetically, these monographs which appear annually are among the best neurological literature extant.

Lennox's¹⁸ observations have been corroborated regarding tridione as an effective drug in the therapy of petit mal epilepsy. It is dispensed in capsules each containing 0.32 Gm. (5 grains) and dosage has varied from 1.0 to 2.0 Gm. (15 to 30 grains) a day without much regard for age. Since there is little other therapy that is successful in petit mal, it is important to know about tridione.

Mesantoin (methylphenylethyl hydantoin) while not quite as effective as dilantin sodium in the treatment of grand mal epilepsy and psychomotor seizures, is an anticonvulsant drug useful in those patients who exhibit untoward reaction to dilantin such as uncontrollable ataxia or gum hypertrophy. Drugs of the hydantoin group should be begun in a single daily dose of 0.1 Gm. (1.5 grains) after food for about three days, then the dose is increased by one capsule weekly until the seizures are brought under control. The usual minimal effective daily dose of mesantoin, as dilantin, is three capsules (0.3 Gm.) and the usual maximum daily dose is 0.6 Gm. These drugs are administered best after meals because of their potentiality of otherwise producing gastric distress.

The excellent program of public education in epilepsy under the direction of the American Epilepsy League gains momentum. This is a most important and enlightened development. Patients should be urged to join this organization[†] and receive carefully edited literature* bearing on their condition. This is a practical necessity in the modern therapy of epilepsy since many questions occur to the patient about his disease that the physician cannot hope to answer. All aspects of epilepsy are considered in these books and pamphlets which are written in language that may be understood by the patient.

It is becoming clear with widening experience that the incidence of psychomotor epilepsy is considerably higher than had been thought to be the case previously. Evidently this type of epilepsy has been confused in the past with petit mal which occurs rarely in the adult. Any person experiencing rather short episodes of unusual behavior for which he has no memory might well be suspected of suffering from attacks of psychomotor seizures. It should never be forgotten that homicide has been

[†] American Epilepsy League, Room 405, 50 State Street, Boston, Massachusetts.

* e.g., Lennox, W. G.: *Science and Seizures: New Light on Epilepsy and Migraine*, New York, Harper and Brothers, 2 ed., 1946.

Yahres, H.: *Epilepsy—The Ghost Is Out Of The Closet*. Published by Public Affairs Committee, Pamphlet No. 98, New York City, 1944.

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[‡] Epilepsy. Res. Publ. Ass'n. nerv. ment. Dis., volume 26. Baltimore, Williams and Wilkins Co. 1947. (In press.)

committed during attacks of psychomotor epilepsy. It is of extreme importance to make this diagnosis correctly since the disorder responds so nicely to dilantin or to phenobarbital, properly administered.

ELECTROENCEPHALOGRAPHY

With increasing experience it has become apparent that electroencephalography is not a tool to be used frequently in diagnosis;⁸ rather it is a method of investigation. Possibly the most important diagnostic use of the electroencephalograph occurs when epilepsy is suspected and proof thereunto is badly needed. Then serial electroencephalographic studies done every second or third day may reveal cerebral dysrhythmia, since it has been demonstrated that the electroencephalogram is considerably more apt to be abnormal immediately before, during, and immediately after a fit than it is during the remainder of the interseizure period. At the recent meetings in New York, Frederic and Erna Gibbs¹¹ reported that cerebral dysrhythmia in patients suffering from epilepsy may be demonstrated in almost 100 per cent of the cases if records are made when the patient is asleep.

NEUROSYPHILIS

There is no longer doubt about the effectiveness of penicillin in the therapy of many types of neurosyphilis.^{31**} It should be administered in doses of 50,000 units intramuscularly every three to four hours day and night until about 5,000,000 to 10,000,000 units have been received. At present it seems well to follow a course of penicillin with the older types of therapy; fever therapy may be administered simultaneously with or subsequent to penicillin.

A second course of penicillin has been followed by favorable results in some cases of neurosyphilis where the first course had had little effect.

CEREBRAL COMPLICATIONS OF PNEUMONIA

Baker and Noran¹ have been studying experimentally the encephalitic complications of pneumonia after finding numerous intravascular clots or thrombi in the brains of persons dying with the disease. They noted that 8 cc. of a solution of finely homogenized lung tissue injected intravenously in animals of the same species was followed promptly by convulsions and death. Homologous extracts from organs other than the lung proved innocuous as did lung of heterologous species of animals. The brains from the animals succumbing to the lung inoculations consistently revealed intravascular clots and perivascular damage. These workers believe that the pathologic picture in the brain of the experimental animals is identical to that which they found so commonly in cases with the encephalitic complications of pneumonia.

Baker and Noran noted that the encephalitic symptoms appeared at the beginning of, during, or after the pneumonia during convalescence. They

feel that the cerebral lesions probably are due to some change in the clotting mechanism since in all animals all symptoms could be prevented by a preliminary intravenous injection of 100 units of heparin. This work may bear on the pathology of disseminated sclerosis, as Putnam²⁴ has brought forward evidence concerning intravenous clotting in this disease.

EXTINCTION OR SUPPRESSION PHENOMENON

The neurological examination may be briefly defined as a comparison of the form and functions of one side of the body with those of the other, and of the functions of the patient with those of the examiner. We must now add that simultaneous testing of the two sides may be necessary.

In a series of closely reasoned presentations, Bender and Teuber^{3,4} and later Reider²⁶ have studied the phenomenon termed variously as suppression or extinction, in brain-wounded military personnel. They have demonstrated that certain signs of neurological damage may be brought out only by making the cerebral hemispheres compete simultaneously. One may test a certain sensory function, for example touch or pain, in the usual manner, first on one side of the body then on the other and determine it to be normal. However, by testing touch or pain simultaneously on the two sides it may be shown that the side of the body served by an injured cerebral hemisphere may demonstrate certain deficits in sensory appreciation. Possibly this may be most readily demonstrated in the fields of vision where with the usual perimetry and screen techniques the visual fields may be considered to be normal. Yet simultaneously presented objects in both visual fields may result in fading of the object in the field subserved by an injured lobe. This phenomenon was termed "visual inattention" by older neurologists who recognized it as a precursor to the visual field defect in progressing disease.

FASCICULATION OR "FIBRILLATION" OF MUSCLE

Particularly to reassure the seemingly numerous physicians who occasionally suffer from muscle fasciculations, mention should be made of the benign form. Before doing so, however, it should be noted that the muscle fasciculation that accompanies the inexorable advance of amyotrophic lateral sclerosis is not benign; on the contrary it is a most ominous portent. However, it usually is not found by the patient; as a rule he is unaware of its existence until it is called to his attention by a physician.

Benign muscle fasciculation¹⁰ is of reasonably frequent occurrence, particularly toward the end of the day when fatigue is maximal. This type of fasciculation usually limits itself to a single muscle and the movement is somewhat coarser than that accompanying gradual muscle and anterior horn cell deterioration, and it usually disappears after a night's sleep. I have observed cases of benign muscle fasciculation in which certain muscles, particularly those of the calves, are continuously in small movement which has been so aptly described

** See the series of articles on the therapy of various types of syphilis with penicillin, which appeared in the January 4, 1947, issue of the Journal of the American Medical Association.

as resembling that of a bag of worms. This phenomenon continues for years and is innocuous except as it annoys.

Fasciculation of muscles may be observed in disorders of the peripheral nerve.

PSYCHOSOMATIC DISORDERS

A most significant article by Halliday,¹² a doctor of public health in Glasgow, has recently appeared with an analysis of the factors responsible for the upward trend of psychosomatic organic affections. Using epidemiological techniques, Halliday has given the first clear indications why we are being inundated with psychosomatic disorders in this era, and he also gives reasons why hysteria is becoming a rarity. This contribution is of such timeliness that it should be read by every physician, since each of us is faced daily with some aspect of these disorders.

As for the neurologist, one need only survey his practice to find irrefutable evidence that he should have an orientation to psychiatry. By far the great majority of patients who come to the neurologist are those whose illnesses stem from emotional disturbance. If the neurologist handles these people without psychiatric insight, his practice is doomed to futility. Both his practice and his increasing concern with chronic disease leave the neurologist no choice but that of understanding and utilizing modern psychological concepts.

An increasing number of disorders previously thought to be of neurological origin primarily, are responding to psychotherapy properly administered,* and there are indications that the list will be lengthened with the passage of time. Many of the chronically painful syndromes such as headache, the neuralgias, myalgias, causalgias require psychological insight, since it must be obvious to us that persons react differently to various noxae. It should be clear that there must be reasons for such differences and that they might best be sought for in the psychological sphere.

Migraine: The syndrome of migraine is seemingly being widened to include many chronic painful conditions about the head and neck and shoulders, including the ubiquitous atypical facial neuralgia.³⁶ It is quite certain that migraine is a protean disease, that its manifestations are myriad.

Recent work²⁸ has gone far toward proving the prescient doctrines postulated so long ago by Latham¹⁷ which briefly stated are that the initial

symptoms of migraine are the result of spasm of intracerebral blood vessels and that the headache itself is due to dilatation of vessels in the scalp. In 1872 Peter Wallwork Latham, then Downing Professor of Medicine at Cambridge, noted further that "sufferers from migraine possess what is called the nervous temperament, their brains are excitable, their senses acute and their imaginations free. The attacks are induced by . . . strain of the feelings, such as grief, anxiety . . ."

We have learned, slowly to be sure, that Doctor Latham's hypotheses are valid. Sufferers from migraine, as he clearly enunciated, fit into a personality pattern. They are neat, meticulous, efficient, and orderly people who, despite their facade of quiet, good nature are subconsciously disturbed by their less fussy and less efficient fellow men. When the person suffering from migraine is helped to become cognizant of the trivial environmental happenings which upset him, he may then be able to prevent the occurrence of some if not all of his disabling attacks, a prevention which surpasses many of the symptomatic forms of temporary relief.

Post-Traumatic Syndrome: For an excellent statement of reasons for the steady increase in automobile accidents, reference should be had to an article by Evans.⁹ Here is a problem in which medicine will soon have to take a hand; as Evans has noted, rightly we think, such a state of affairs would not continue unless it gratified something pretty deep in the national psyche.

Studies of post-traumatic headache³⁰ are clarifying this quite common disorder. Simons and Wolff³² have pointed out that the danger of threats to the integrity of the head because of the implications concerning "brain" initiative, alertness and intelligence in our society, jeopardize the security of the moderately insecure and undermine the poorly adjusted. Associated emotional reactions are accompanied by physical changes in skeletal muscles (sustained contraction) and blood vessels of the scalp that result in headache. The occurrence of headache arouses fresh anxiety and convictions of impending catastrophe.

The attitude of the physician caring for patients with acutely injured heads is of manifest importance as regards recovery. The fearful, overly cautious physician who betrays his insecurity by requiring immobility for weeks and months following injury, aids and abets his legal brethren who prevent the clearing away of the legal aspects of the situation until it may be determined just how badly off the patient may become. This chasing-the-rainbow technique results in nothing so much as frustration. The possible loss in quick financial settlement will never in any case outweigh the devastating effects of prolonged illness of increasing severity which almost invariably are engendered by these methods.

An indisputable fact that the physician and particularly the surgeon cannot afford to neglect is that the prevention of chronic post-traumatic headache is more readily attainable than its cure. Reassurance and interpretations in the acute stage often allay anxiety so that head sensations assume

* One often is asked to explain how psychotherapy is done, the questioner obviously expecting to try it at the next opportunity. One may as well expect to remove a brain tumor or a foreign body from a bronchus after a few kind words. While it is true that most contacts between physician and patient contain in them elements of psychotherapy, such cannot be expected to effect any but the most superficial of emotional disturbances. A neurosis in development for decades may not be expected to be superficial, and is no less difficult of eradication than many another disease of long standing. (The reader is referred to the book on the subject by Franz Alexander and Thomas French, "Psychoanalytic Therapy. Principles and Applications." Ronald Press Co., N. Y.) However, it seems quite certain that if we are to stem the mounting tide of psychogenic disorders, the general practitioner of medicine has got to learn something about effective psychotherapeutic techniques. It goes without saying that the modern student of medicine should know about them at the time of his graduation.

dwindling significance; probably the most important reassurance is the attitude of the physician who gets the patient out of bed early and who, having justly weighed the situation, minimizes the significance of the symptoms.

Probably next in importance is an evaluation of the setting of the accident. If it occurred in a setting of anxiety, resentment and frustration in a person with long-standing maladjustment, the prognosis is obviously unfavorable, particularly since such persons are prone to indulge in what might be termed nugatory fiddling of the legal variety. If there has been no great personality disturbance prior to the accident and the patient understands the place of the accident and its attendant emotions in his entire life situation, it is reasonably certain that the prognosis is good.

Vascular Diseases: If the emotions are able to effect certain transient changes in blood vessel calibre* in migraine, there is every reason to expect that blood vessels in other areas may respond similarly, and indeed relief has been obtained in vasospastic disorders of the extremities by psychotherapy.^{22, 35} Analogous therapeutic endeavor has been effective in some cases of arterial hypertension,⁵ presumably before a state of irreversibility has supervened. Certain reactions within the nose accompanying emotion¹⁵ probably fall within this category of behavior.

Central angiospastic retinopathy has been re-evaluated^{13, 37} in light of its occurrence in young military personnel. It has been shown that under the tension of battle irreversible changes may occur in the retina due to spasm of retinal vessels induced emotionally.

Aphasia: The relief of dysphasia in brain injured soldiers with the use of sodium amytal has been reported by Linn and Stein.²¹ They demonstrated that men who had suffered injury to the left cerebrum and who were practically mute could be made to talk under amytal, presumably when certain of their anxieties were relieved with this drug. Such improvement as could be effected with amytal was sometimes maintained in the post-sedative period. A report on this technique in civilians who sustained dysphasia during stroke will appear shortly. It is thought if one does not obtain a change with the first amytal interview, subsequent interviews may be effective.

Narcolepsy: This condition which has been considered to be due to some undemonstrable disturbance about the diencephalon finally has been clarified.^{16, 33} While these attacks of irresistible sleep may be prevented by the use of benzedrine, it may be possible to effect a cure with psychotherapy. Persons suffering from narcolepsy have been shown to escape temporarily into short attacks of sleep from what to them amount to episodes of otherwise insoluble conflict.

Causalgia: There have been several reports in the recent literature²⁰ on the relief of causalgia by psychotherapy. Causalgia is an intense burning pain which follows in the wake of partial injury

to peripheral nerves, particularly those of the extremities, which is worsened by stimuli of almost any variety, even certain sounds accentuate this unbearable pain. The most successful therapy up to now has been blocking appropriate sympathetic ganglia with procaine and/or alcohol.

Painful Phantom Limb: The relief of painful phantom limb by shock therapy has been reported by Pisetsky.²³ Practically all persons who sustain an amputation experience what is called a phantom in that it feels as though the amputated extremity is still a part of the body. Occasionally such a phantom is painful, and such pain has been notoriously unrelievable, although in one instance an extirpation of an appropriate portion of the contralateral parietal lobe⁷ afforded relief.

Accumulating experience suggests that extremely chronic, intractable pain of a certain type may be relieved by electric shock therapy. For how long, is not known. This offers an avenue to the psychotherapeutic approach, since patients are not fit subjects for psychotherapy while suffering from extreme pain. Sometimes with the application of a single shock, it is possible to relieve the pain and then proceed with psychotherapy which had been previously inapplicable. Obviously such an approach is not required where other methods of relief are apt to be rewarded with improvement. It is to be reserved for those carefully evaluated patients in whom it has been determined that there is a large psychogenic element.

It is of some interest that prefrontal lobotomy has also been used in the relief of chronic intractable pain of physiogenic and psychogenic varieties. Parenthetically this procedure has resulted in what appears to be permanent relief of vascular hypertension.

THE ACTION OF PLACEBOS

While on the subject of relief of pain the important article by Batterman² on the evaluation of analgesic drugs may be noted. Careful studies have demonstrated that regardless of the severity of pain or the underlying organic disease, placebos will result in analgesia in approximately 40 per cent of trials. What is more a patient may be addicted to a placebo and demand its continuous administration.

These effects of placebos demonstrate how utterly futile it is to rely on a drug in the differentiation between psychogenic or physiogenic disorders. Such studies also suggest that we may question the results of those persons who, when testing a supposedly significant substance, control it by the administration of an indifferent substance, noting that the indifferent substance had *no effect whatsoever*. In such tests placebos should have a modicum of effectivity. There is more to the administration of a substance than those mechanistic concepts that have mostly prevailed up to now, would have led us to believe.

CHRONIC DISEASE

Neurology has become almost imperceptibly a science of chronic disease,²⁹ largely because the more acute diseases of the nervous system have

* An everyday experience is blushing.

been adeptly handled, in part at least, outside the specialty. In the handling of chronic neurological diseases, as well as those conditions other than chronic, that most usually present themselves in a neurologist's office, it has become increasingly necessary for the neurologist to have a proper orientation to psychiatry. There is little possibility of compensating for destroyed nervous tissue by any other than psychological methods.

As has been observed in these notes on recent advances, much of the newer neurological therapy is in the realm of psychotherapy. It ought to be superfluous in this area to note that psychotherapy is not made up of such banalities as the frequently recurring statement to the patient that there is nothing wrong with him or that he must pull himself together. It is now requisite that the neurologist as well as the practitioner have insight into human behavior,^{6, 12, 19, 25, 27, 34} if a large segment of their practice is not to be doomed to futility. As recorded by Halliday in his brilliant analysis, the trend to increased psychosomatic affections is very great and their nature cannot be understood nor can therapy be instituted in the absence of the application of psychosomatic and allied concepts.

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